

**REMARKS**

Claims 1-34 remain in this case. Claims 35-37 have been cancelled. Claims 1, 12, 16, 20-22, 27, 28, 31 and 32 have been amended. Applicant believes that the present application is now in condition for allowance, which prompt and favorable action is respectfully requested.

***Allowable Subject Matter***

The Examiner has acknowledged that claims 22-24, 28-30, and 32-34 are directed to patentable subject matter. The Examiner has objected to these claims, however, as being dependent upon a rejected base claim, indicating that allowance would be forthcoming if these claims were rewritten in independent form. Although Applicant does not agree with the Examiner's rejection of the base claims, to advance the prosecution of this case, claims 22, 28 and 32 have been rewritten in independent form and are now in condition for allowance. Claims 23-24, 29-30, and 33-34 are dependent from claims 22, 28, and 32, respectively, and therefore, are also in condition for allowance.

***Claim Rejections – 35 USC § 102***

Claims 1-3, 5-9, 11-13, 15-18, 20, 21, 25, 27 and 31 have been rejected under 35 USC § 102(a) as allegedly being anticipated by Bjerke (US 2003/0103584).

***A. Claims 1-3, 5-9, 11-13, and 15-18***

Applicant discloses a novel and unobvious approach for performing data detection for a hierarchical coded data stream. Hierarchical coding is a data transmission technique whereby first and second data streams are superimposed and transmitted simultaneously. In one embodiment disclosed by Applicant, a receiver recovers the symbols for the first data stream, derives the log-likelihood ratios (LLRs), and then decodes the LLRs to obtain decoded data for the first data stream. The LLRs for the second data stream are computed by *subtracting the estimated interference contributed by the first data stream from the LLRs for the first data stream*.

Bjerke discloses a method for detecting data in a MIMO-OFDM communications system. The MIMO-OFDM communication system includes  $N_T$  transmit antennas and  $N_R$  receive

antennas. The  $N_R$  antennas feed a receiver unit, which is used to recover each of the  $N_T$  data streams. Referring to FIGS. 4C and 6 in Bjerke, a interference nullo 450a used to recover the symbols for the first data stream. A LLR computer 452a computes the LLRs for the first data stream and then an iterative process is performed between the LLR computer 452a and the decoder 440a to recover decoded data bits. The LLRs for the second data stream are computed by *subtracting the estimated interference from the decoded bits for the first data stream*. This is to be contrasted to Applicant's approach, which does not use the *decoded data bits* to derive the LLRs for the second data stream. Instead, Applicant uses the LLRs for the first data stream to derive the LLRs for the second data stream as clearly set forth in claim 1 where it is recited:

“deriving LLRs for code bits of a second data stream by *subtracting the estimated interference from the LLRs for the code bits of the first data stream*.”

(emphasis added). Accordingly, Bjerke cannot be said to anticipate claim 1. Claims 12 and 16 contain similar limitations, and therefore, are also patentable over Bjerke.

In view of the foregoing remarks, Applicant respectfully requests that the rejection of claims 1, 12 and 16, and all claims dependent therefrom, be withdrawn.

**B. Claims 20, 21, 25, 27 and 31**

In one embodiment of a wireless communications system disclosed by Applicant, the interference is estimated from *data symbol estimates* for the first data stream. In contrast, Bjerke estimates the interference from *remodulated symbols* for the first data stream. More specifically, in Bjerke, the symbols from the first data stream are recovered, the LLRs computed, and the data decoded. The decoded data is then re-encoded and remodulated to produce *remodulated symbols*, from which the interference is estimated.

In order to support the pending rejection of claims 20, 21, 25, 27 and 31, one would have to take an unduly broad interpretation of the phrase “*data symbol estimates*,” improperly reading it to include *remodulated symbols*. However, this interpretation is inconsistent with the specification in the patent application. The specification is quite clear on this point. “[T]he interference ... is estimated based on the uncoded data symbol estimates (instead of the remodulated symbols) ....” (See, patent application, para. [0061]). After equating an “*uncoded data symbol estimate*” to a “*data symbol estimate*,” the specification goes on to say that “[d]ata symbol estimates are derived based on the received symbols without the benefit of the error

correction capability of the code used for the base [or first data] stream.” (See, patent application, para. [0062]) (emphasis added). Thus, the specification clearly draws a distinction between “*data symbol estimates*” and “*remodulated symbols*.”

To further clarify this distinction, the phrase “*data symbol estimates*” has been amended in claims 20, 21, 25, 27 and 31 to “uncoded *data symbol estimates*.” Since “*uncoded data symbol estimates*” is the meaning that would be given to the phrase “*data symbol estimates*” under a proper claim construction, this amendment does not change the scope of the claims. Accordingly, this amendment is not a narrowing amendment made for reasons of patentability.

In view of the foregoing amendment, Applicant respectfully requests that the rejection of claims 20, 21, 25, 27, and 31 be withdrawn.

### ***Claim Rejections – 35 USC § 103***

Claims 4, 14, 19, and 26 have been rejected under 35 USC § 103(a) as allegedly being unpatentable over Bjerke in view of Maru (US 6,516,444). Claims 10 and 35-37 have been rejected under 35 USC § 103(a) as allegedly being unpatentable over Bjerke in view of Leung (US 2003/0172114).

In rejecting claim 26, the Examiner relies on Bjerke for estimating the interference from data symbol estimates for the first stream. In rejecting claims 4, 10, 14 and 19, the Examiner relies on Bjerke for deriving LLRs for the second data stream based on the estimated interference and the LLRs for the first data stream. Accordingly, these claims are also patentable for the same reasons stated above in connection with the claims rejected under section 102. Thus, Applicant respectfully requests that the rejection of claims 4, 10, 14, 19 and 26 also be withdrawn.

### CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that this application is now in condition for allowance, and accordingly, reconsideration and allowance are respectfully requested. Should any issues remain which the Examiner believes could be resolved in a telephone interview, the Examiner is requested to telephone Applicant's undersigned attorney

Respectfully submitted,

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